

# Natural Resources Conservation Service

## Fishpond Management (Code 399)

### Appendix I

#### Population Control In Existing Ponds

Ponds having over populations of panfish (with viable numbers of bass) can be brought into balance by one or a combination of the following methods:

1. **Trapping**. Using a bluegill trap, remove from 50-100 lbs. of bluegills (particularly in the 3-4 inch range) per surface acre. Trapping should cease when catch per day is one-half of that caught when trapping started. Use 2-4 traps per acre. Success is measured by the presence of bass fry. Trap designs may be obtained from the state staff biologist.

2. **Seining**. A 1/2 - 3/4 inch mesh seine 20-50 feet in length should be used to remove 50-100 lbs. of 3-4 inch bluegills per acre.

Trapping and seining in West Virginia do not require a permit on private impoundments or impoundments used for commercial purposes. However, it is currently illegal to seine or trap in many instances in public waters. Check with the West Virginia Division of Natural Resources for more information.

3. **Water level manipulation**. Bass spawning usually begins when water temperatures reach 60-65°F (16 to 18 ° C). Spawning is generally complete by the end of June. Water levels should be lowered by 1/4 to 1/2 of normal during the summer after bass have spawned. Maintain this level throughout summer until the water cools in the fall to a temperature of less than 80° F (27° C). This drawdown will eliminate the spawning area for bluegill while preventing them from having access to vegetative cover. This increases the chance for predation by bass. A fall drawdown designed to control aquatic weed control may also increase predation of bluegill by bass.

4. **Predator addition**. Adult flathead catfish(>24 inches) can be introduced into ponds to help control over population of bluegills. No more than two fish should be introduced into impoundments less than 1 acre in size. In impoundment greater than 1 acre no more than 4 per acre should be added.

Adult bass may also be added into an impoundment in conjunction with seining or trapping to provide control of overpopulation. Stock 15 - 20, 1/2 to 1 lb. bass per acre.

5. **Total Reclamation**. Drain the impoundment completely and remove all fish. Pumping may be required if the existing drain will not completely dewater the site. In addition, a fish toxicant may also be used. However, this should only be done in accordance with all applicable federal laws, state laws and regulations. Landowners should contact the WV Division of Natural Resources fisheries biologist for information concerning the use of a fish toxicant. Following the elimination of all existing fish, restock the pond as per the recommendations given in this standard or a fisheries biologist.

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## Appendix II

### Stocking

**Commercial fish dealers must have authorization by permit to transport fish into the state.**

Only fish stock from licensed reputable dealers will be utilized in stocking or restocking ponds.

Stocking should occur only in impoundments free from "wild" fish. Remove any existing fish in an old pond prior to stocking.

Fingerlings of any species should not be stocked where adult fish are present.

Only a minimum number of species are suited for stocking in West Virginia ponds. Those species include:

1. Warm water- largemouth bass, bluegill and channel catfish.
2. Cold water species appropriate for stocking in ponds where the surface temperature does not exceed 70° F (21° C) include: rainbow trout and brook trout.

Refer to Tables 1 and 2 for stocking rates of species. Landowners should be discouraged from stocking any species other than those listed in Tables 1 and 2.

<b>Largemouth Bass</b>	<b>Bluegill</b>
100 Fingerlings	500 Fingerlings
25 Adults 10" or greater	50 Adults 8" or greater
<b>Channel Catfish</b>	
With Largemouth Bass and Bluegill	50 ea (4 - 6")
Stocked alone with supplemental feeding of commercial food	1000 ea (4 - 6")
Stocked alone without supplemental feeding	50 Adults

***Table 1. Warm Water Ponds Species and Stocking Rates per Surface Acre***

<b>Brook Trout</b>	<b>Rainbow Trout</b>
300-500	

***Table 2. Cold Water Pond Species and Stocking Rates per Surface Acre***

For warm water ponds, stock bass and bluegill fingerlings simultaneously in the fall. When this is not practical stock bluegills in the fall and bass the following spring.

Channel catfish fingerlings should be stocked at the same time as bass and bluegill; or 6 inch to 10 inch catfish only after a reproducing population of bass and bluegill are established.

For cold water ponds, brook and rainbow trout should be stocked in the fall in ponds managed on a biennial basis. For ponds managed on an annual basis, stock trout in the spring.

Transporting new stock to a pond in a container of pond water causes the least amount of stress on fish. At the time of stocking check temperatures of container water and pond water. Water should gradually be mixed if more than 5° F difference exists. Fish should be dispersed gradually into the release area.

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#### Harvest Management

Warm water ponds in West Virginia may produce from 100 to 200 lbs. of fish per acre per year. This means that the pond has the capacity to contain between 25 and 50 lbs. of predator fish (bass) per acre per year.

When harvesting newly stocked ponds, fishing for bass and bluegill should occur only after both have successfully reproduced. Trout and catfish may be harvested when they reach the desired size.

Over-harvest of bass will result in over production of bluegills characterized by stunting and eventually a cessation of bass spawning. This condition can be diagnosed by seining in late summer to determine if bass fry are present. If any fry are present the pond is functioning in a satisfactory manner.

For small (<1 acre) warm water impoundments, the preferred method for managing bass-bluegill populations is the "crowd bass" method. In this method no bass are removed from the pond. Bass may be caught for recreational purposes but must be carefully released, except that the occasional trophy fish may be removed. This method will produce large panfish which can be used for consumption.

Another method is a periodic reclamation alternative. If bass are removed regularly from a small impoundment, reclamation of some form will be required within a few years of the original stocking.

For larger (>1 acre) warm water impoundments, a range of 10-15 lbs. of bass may be removed from larger ponds without significantly altering populations. However, this requires careful and accurate record keeping to prevent over-harvest. Removal of 1 lb. of bass will necessitate the removal of 4 lbs. of bluegill to maintain a balanced population.

Largemouth bass - bluegill management is more likely to attain desired objectives in larger impoundments (>3 surface acres).

Channel catfish may be harvested as desired. Restocking will be necessary. Managing for large trout does not lend itself well to good fishpond management, since only a small percentage of trout live more than 2 years in ponds.

Trout populations are best managed by fishing and, if desired, supplemental feeding. Heavy fishing may occur the first summer following stocking depending on the size desired. Restocking should occur annually to achieve the desired population levels.

### **Removing Undesirable and Overpopulated Fish Populations**

A fish toxicant (rotenone) may be the most practical method of eliminating undesirable fish populations. A fish toxicant may be used to harvest some or all fish from a pond as the following conditions exist:

- Fish populations dominated by undesirable species.
- Complete kill needed before restocking.
- Bass, bluegill, or catfish are severely unbalanced.

**Toxicants should only be used by trained personnel and as prescribed by a state fisheries biologist. Contact the West Virginia Division of Natural Resources for more information.**

### **Supplemental Feeding**

Generally, there is enough natural food in a recreational warm water fishpond to support the growth and reproduction of fish stocked at recommended rates. Therefore, artificial feeding is not necessary under these circumstances.

When utilizing supplemental feeding potential problems exist with excessive waste water and decomposing feed. Care should be exercised so discharges do not exceed water quality standards in adjacent water bodies. State water quality certification may be required.

**Trout.** The use of commercial trout feed can increase production 10 to 20 fold. Generally, about one pound of feed produces one-half pound of trout. Young trout should be fed three times a day, if fast growth is desired. Feed only what fish will eat in 15 minutes without overfeeding.

Trout should not be fed when surface water temperature exceeds 65°F.

**Channel Catfish.** Commercial floating catfish feed (32 percent protein) may be fed 2 - 3 days per week when surface water temperature is between 70° and 90°F.

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#### Pest and Nuisance Controls

##### Animals

**Musk rats.** Trapping and hunting may be an effective means of controlling muskrats in impoundments. Check with the WV Division of Natural Resources for laws governing hunting and trapping of muskrats.

A heavy gauge hardware cloth or similar material may be attached across the face of the fill. Extend one foot above and 3 to 4 feet below the normal water line and bury one foot below the soil surface. Rip rap placed along the dam one foot above and 3 feet below the water line will also eliminate muskrat burrowing.

**Crayfish.** Although most crayfish cause no harm to ponds in West Virginia, they can cause problems when they actively burrow into the fill material. There are several methods of fumigation of the holes including chloride of lime, soap, turpentine and lye (NaOH).

**Turtles.** Snapping turtles are rarely a problem in West Virginia ponds and pose very little risk of impacting fish populations. However, turtles may pose a problem with young waterfowl using fishponds or in ponds that are frequently used for swimming.

Snappers can be removed from ponds by trapping and relocation with either commercial or homemade traps. Other methods may be acceptable including hunting or fishing subject to state laws and hunting or fishing regulations.

##### Plants

**Biological control.** White Amur or "Grass Carp" can provide long term control on certain plants and may be stocked in ponds to control undesirable aquatic vegetation. However, they are less efficient at controlling weeds as they reach seven pounds. Grass carp prefer submerged succulent plants to fibrous plants.

If grass carp are used in conjunction with herbicides or mechanical methods, they should be stocked after the effects of these treatments have been achieved and before re-growth of the plants. Otherwise, cooler months of the year are the best time for moving and handling grass carp because fish are less susceptible to injury and disease.

Stocking rates should be based on the amount of vegetation (e.g. number of fish per vegetated acre) rather than using the size of the water body as a determining factor.

Use only certified sterile stock (triploid chromosome fish). Stock according to Table 3 or as recommended by a WV Division of Natural Resources fisheries biologist.

Pond Condition	Degree of Weed Infestation		
	Slight	Moderate	Heavy
Pond with predators	5 ea 8-12" fish	10-15 ea 8-12" fish	15-20 ea 8-12" fish
Pond without predators	6-8 ea 2-6" fish	12-18 ea 2-6" fish	18-20 ea 2-6" fish

**Table 3. Stocking rates (number of grass carp/acre) for ponds with and without predators such as bass and catfish.**

**Mechanical Control.** Depending on available labor and equipment, weeds may be removed by pulling, raking, netting, seining, and pulling a dragline or chain across the pond bottom. Manual control is most appropriate and efficient in the early stages of weed development.

Vegetation may be pulled or cut and removed from the pond. Rooted emergent and floating vegetation can be controlled by repeated cutting below the water level. Emergent plants cannot create energy reserves if they are not allowed to reach the surface.

Water levels may also be reduced exposing problem weed beds in early fall and maintained through early winter.

**Chemical control.** An accurate identification of the plant species is critical for chemical treatments. Use herbicides as a last resort for weed control. Refer to the WVU Cooperative Extension Service for specific herbicides and rates for the species to be treated.

Avoid using herbicides in warm water ponds when air temperatures are over 90°F.

Use only herbicides approved for aquatic use by the US Environmental Protection Agency. Use all herbicides according to the labeled instructions.